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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/739,453	12/17/2003	Keita Hara	60436 (70551)	9305
21874 7590 09/27/2007 EDWARDS ANGELL PALMER & DODGE LLP P.O. BOX 55874 BOSTON, MA 02205			EXAMINER KISWANTO, NICHOLAS	
			ART UNIT 3609	PAPER NUMBER
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Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary

Application No.

10/739,453

Applicant(s)

HARA ET AL.

Examiner

Nicholas Kiswanto

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-56 is/are pending in the application.
- 4a) Of the above claim(s) 9-38, 40-44, 46-50 and 52-56 is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-8, 39, 45 and 51 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 17 December 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. ____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|--|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>12/17/2003</u> . | 6) <input type="checkbox"/> Other: ____ |

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1 – 9, 39, 45, 51 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

As to claims 1, 39, 45, and 51, they each refer to “an area of search”.

Such a description fails to distinctly claim the actual search coverage of invention, since “an area of search” has a nearly unlimited scope.

Further, in claim 2, a reference to “the area of search” is made. It is unclear whether this is the same area of search referenced in claim 1, or a different area of search. The same argument against use of “area of search” raised against claim 1 is applied to claim 2 as well, since such a phrase has nearly unlimited scope.

As to claims 3 – 9, they are rejected due to being dependent on claims 1 or 2.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in a patent granted on an application for patent by another filed in the United States before the invention thereof by the applicant for patent, or on an international application by another who has fulfilled the requirements of paragraphs (1), (2), and (4) of section 371(c) of this title before the invention thereof by the applicant for patent.

The changes made to 35 U.S.C. 102(e) by the American Inventors Protection Act of 1999 (AIPA) and the Intellectual Property and High Technology Technical Amendments Act of 2002 do not apply when the reference is a U.S. patent resulting directly or indirectly from an international application filed before November 29, 2000. Therefore, the prior art date of the reference is determined under 35 U.S.C. 102(e) prior to the amendment by the AIPA (pre-AIPA 35 U.S.C. 102(e)).

4. Claims 1 – 4 are rejected under 35 U.S.C. 102(e) as being anticipated by Byrne et al. (6,687,571), henceforth referred to as “Byrne/571”.

As to claim 1, Byrne/571 shows a group robot system comprising a plurality of sensing robots (col 1, line 65 – 67), and a control apparatus (44) controlling said sensing robot (col 1, line 31 – 32), wherein said control apparatus responds to detection of an object by said sensing robot to provide control such that a sensing robot other than said sensing robot that has detected said object moves outside an area of search (col 10, line 18 – 26).

As to claim 2, Byrne/571 shows a group robot system according to claim 1, wherein each of said plurality of sensing robots is equipped with a function of a predetermined stage (col 5, line 43 – 52), said control apparatus responds to detection of an object by said sensing robot to provide control such that another sensing robot that is equipped with a function of a stage differing from the function of said sensing robot conducts further search of said object (col 10, line 33 – 35), due to each robot carrying only one type of sensor (col 7, line 50 – 51), and to provide control such that a sensing robot other than said sensing robot that has detected the object and said sensing robot conducting further search moves outside the area of search (col 10, line 36 – 38).

As to claim 3, Byrne/571 shows a group robot system according to claim 2, wherein said control apparatus enables the function of a sensing robot equipped with a function of a predetermined stage among said plurality of sensing robots (col 9, line 21 – 23), and when said sensing robot with the enabled function detects an object, enables the function of another sensing robot that is equipped with a function of a stage differing from the function of said sensing robot to provide control such that said another sensing robot with the enabled function conducts further search of said object (col 9, line 13 – 20).

As to claim 4, Byrne/571 shows a group robot system according to claim

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2, wherein said function of said sensing robot is any of a sensing resolution, a sensor type, and a processing method of sensor information (col 5, line 43 – 52).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

6. Claims 5 – 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byrne/571 in view of McLurkin et al. (2006/0079997), henceforth referred to as “McLurkin/997”.

As to claim 5, Byrne/571 discloses the claimed invention as shown in paragraph regarding claim 1 above.

However, Byrne/571 does not show the plurality of sensing robots and control apparatus communicating in a hierarchical manner.

McLurkin/997 shows a plurality of sensing robots communicating with each other in a hierarchical manner (**“The second robot can transmit the data to the first robot directly, or through a one or more intermediaries, [0014]; “The state data can also include information concerning the identity of the second robot 208, its hierarchy (e.g., priority) among several robots...”**, [0085]). McLurkin/997 teaches that such communication is necessary in the

case that an obstruction prevents line of sight communication between robots (**"In the case of optical communication, there is an unobstructed path between the first robot 202 and the third robot, and between the second robot 208 and the third robot. This allows for the instance where, for example, an obstruction between the robots 202, 208 prevents line-of-sight communication, [0088]).**

It would have been obvious to one of ordinary skill in the art to use McLurkin's hierarchical communication in Byrne/571's invention in order to maintain a communication link in case there is an obstruction between the control apparatus and the target robot, so that control apparatus can still relay directives to sensing robots, such as to move outside an area of search (col 10, line 36 – 38).

As to claim 6 and 7, Byrne/571 discloses the claimed invention as shown in paragraph regarding claim 1 above.

However, Byrne/571 does not show a pheromone robot.

According to application, a pheromone robot is defined as a robot that acts as an intermediary control apparatus in lieu of the stationary base station.

Accordingly, McLurkin/997 shows a pheromone robot (**"the traffic includes information to synchronize several robots to a common clock, typically a robot defined as the 'temporal leader'", [0103]).** It can be seen that McLurkin/997's temporal leader

It would have been obvious to one of ordinary skill in the art to combine McLurkin/997's temporal leader with the control apparatus of Byrne/571 in order to expand the capabilities of McLurkin/997's temporal leader so that it fits applicant's claimed pheromone robot, since Byrne/571's control apparatus would not lose any functionality no matter if it is located in a base station or McLurkin/997's temporal leader.

7. Claim 8 is rejected under 35 U.S.C. 103(a) as being unpatentable over Byrne/571 in view of Smith (6,206,324), henceforth referred to as "Smith/324".

As to claim 8, Byrne/571 discloses the claimed invention as shown in paragraph describing claim 1 above.

However, Byrne/571 does not show that the sensing robot is capable of a fluttering flight by a fluttering motion.

Smith/324 shows a robot capable of a fluttering flight by a fluttering motion (Smith, col 4, line 30). Smith/324 teaches that fluttering flight offers the possibility of providing improved maneuverability (col 1, line 49 – 51).

It would have been obvious to one of ordinary skill in the art to modify the invention of Byrne/571 with Smith/324's fluttering robot as its sensing robots in order to improve maneuverability as taught by Smith/324.

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8. Claims 39 and 45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Byrne/571 in view of Smith/324.

As to claim 39, Byrne/571 shows a sensing robot included in a group robot system comprising a plurality of sensing robots (col 1, line 65 – 67) and a control apparatus (44) controlling said sensing robot (col 1, line 31 – 32), and in which said control apparatus responds to detection of an object by said sensing robot to provide control such that a sensing robot other than said sensing robot that has detected the object moves outside an area of search, wherein the sensing robot in the group robot system is under control of said control apparatus (col 10, line 18 – 26).

However, Byrne/571 does not show that the sensing robot is capable of a fluttering flight.

Smith/324 shows a robot capable of a fluttering flight by a fluttering motion (Smith, col 4, line 30). Smith/324 teaches that fluttering flight offers the possibility of providing improved maneuverability (col 1, line 49 – 51).

It would have been obvious to one of ordinary skill in the art to modify the invention of Byrne/571 with Smith/324's fluttering robot as its sensing robots in order to improve maneuverability as taught by Smith/324.

As to claim 45, Byrne/571 shows a base station (44) included in a group robot system comprising a plurality of sensing robots (col 1, line 65 – 67), and a

control apparatus controlling said sensing robot (col 1, line 31 – 32), and in which said control apparatus responds to detection of an object by said sensing robot to provide control such that a sensing robot other than said sensing robot that has detected the object moves outside an area of search (col 10, line 18 – 26), wherein said base station corresponds to said control apparatus, and controls said sensing robot.

However, Byrne/571 does not show that the sensing robot is capable of a fluttering flight.

Smith/324 shows a robot capable of a fluttering flight by a fluttering motion (Smith, col 4, line 30). Smith/324 teaches that fluttering flight offers the possibility of providing improved maneuverability (col 1, line 49 – 51).

It would have been obvious to one of ordinary skill in the art to modify the invention of Byrne/571 with Smith/324's fluttering robot as its sensing robots in order to improve maneuverability as taught by Smith/324.

9. Claim 51 is rejected under 35 U.S.C. 103(a) as being unpatentable over Byrne/571, in view of McLurkin/997, further in view of Smith/324.

As to claim 51, Byrne/571 shows a group robot system comprising a plurality of sensing robots (col 1, line 65 – 67) and a control apparatus (44) controlling said sensing robot (col 1, line 31 – 32), and in which said control apparatus responds to detection of an object by said sensing robot to provide

control such that a sensing robot other than said sensing robot that has detected the object moves outside an area of search (col 10, line 18 – 26).

However, Byrne/571 does not show a pheromone robot.

According to application, a pheromone robot is defined as a robot that acts as an intermediary control apparatus in lieu of the stationary base station.

Accordingly, McLurkin/997 shows a pheromone robot ("the traffic includes information to synchronize several robots to a common clock, typically a robot defined as the 'temporal leader'", [0103]). It can be seen that McLurkin/997's temporal leader

It would have been obvious to one of ordinary skill in the art to combine McLurkin/997's temporal leader with the control apparatus of Byrne/571 in order to expand the capabilities of McLurkin/997's temporal leader so that it fits applicant's claimed pheromone robot, since Byrne/571's control apparatus would not lose any functionality no matter if it is located in a base station or McLurkin/997's temporal leader.

Byrne/571 and McLurkin/997 do not show that the sensing robot is capable of a fluttering flight.

Smith/324 shows a robot capable of a fluttering flight by a fluttering motion (Smith, col 4, line 30). Smith/324 teaches that fluttering flight offers the possibility of providing improved maneuverability (col 1, line 49 – 51).

It would have been obvious to one of ordinary skill in the art to modify the invention of Byrne/571 and McLurkin/997 with Smith/324's fluttering robot as its sensing robots in order to improve maneuverability as taught by Smith/324.

Conclusion

10. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Sherman (5,974,236) shows a wireless, hierarchical communication method.

Perelman et al. (5,701,120) shows a communication method that uses hops if the end to end nodes are out of range.

Takano et al. (2001/0049562) shows a hierarchical control method.

Solomon (2005/0251291) shows a group robot system.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nicholas Kiswanto whose telephone number is (571) 270-3269. The examiner can normally be reached on Monday - Friday, 8AM - 5PM, EST.

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If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Khoi Tran can be reached on (571) 272-6919. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.


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September 18, 2007